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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,713	07/29/2004	Scott D. Maxwell	03-1405 (BOE 0509 PA)	4712

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EXAMINER
ROGERS, DAVID A

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

Office Action Summary	Application No.	Applicant(s)	
	10/710,713	MAXWELL ET AL.	
	Examiner	Art Unit	
	David A. Rogers	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-33) in their reply filed on 02 March 2006 is acknowledged. In their response the applicant cancelled the non-elected claims. Claims 1-33 remain pending.

Specification

2. The disclosure is objected to because of the following informalities.

a. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested:

> System for Temperature-Controlled Testing of Hydraulically Àctuated Devices

b. Paragraph 0004 is poorly written. It is requested that this paragraph be amended as follows to improve readability.

> It is known to travel to an environment where expected operating temperatures exist in order to test hydraulic systems and components. It is also known to physically insert the hydraulic systems and components into a freezer for cold temperature testing. These known techniques for testing hydraulic systems and components are time consuming, costly, and in some instances, such as when a freezer is utilized, can require large testing equipment.

c. In paragraph 0008 it is requested that the word "reliably" be replaced with --reliable-- in order to improve readability.

d. In paragraph 0022 it is requested that the phrase "liquid bath 46" used in the last sentence be replaced with --fluid bath 46-- in order to be consistent with the remainder of the specification.

e. In paragraph 0024 it is requested that the word "temperate" used in the third sentence be replaced with --temperature-- in order to correct the typographical error.

f. In paragraph 0026 it is requested that the word "forth" used in the fifth sentence be replaced with --fourth-- in order to correct the typographical error.

Appropriate correction is required.

Drawings

3. The drawings are objected to because figure 1, reference item 16, should be amended to replace "hydronic" with "hydraulic". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next office action. This objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1, 4, 7, 10, 11, and 14 are objected to because of the following informalities.

a. On line 5 of claim 1 it is requested that the word --temperature-- be inserted between the words "a controlled" in order to be consistent with line 1.

b. On line 1 of claim 4 it is requested that the word --said-- be inserted before the word "circulation" to improve readability.

c. On line 1 of claim 7 it is requested that the word "test" be replaced with "supply" in order to provide proper antecedent basis.

d. Claim 10 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 9 requires the use of a temperature altering fluid.

Claim 10 states that the fluid is either a liquid or a gas. It is generally known that the term "fluid" comprises both liquids and gasses.

e. In claim 11 it is requested that both instances of the word "air" be replaced with --fluid-- in order to provide proper antecedent basis.

f. Claim 11 is further objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 9 states that the temperature altering fluid is circulated *through* the first housing. This would inherently require a fluid inlet and a fluid outlet (as opposed to a device that circulated fluid *within* a housing).

g. Claim 14 states that the device can detect pressure at the output of the first hydraulic reservoir. However, figure 1 and paragraph 0021 describe the detection of pressure at the output of a pump coupled to the outlet of the first hydraulic reservoir. The applicant is requested to clarify this discrepancy.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the

> subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 3,942,375 to Shepard in view of European Patent Application Publication EP 225397 to Beran *et al.*, United States Patent 5,585,549 to Brevick *et al.*, and United States Statutory Invention Registration H229 to Phillips.

Shepard teaches a method and device for testing hydraulically actuated devices (reference item 56), hereinafter referred to as a device under test (DUT). The general schematic is shown below as figure 1.

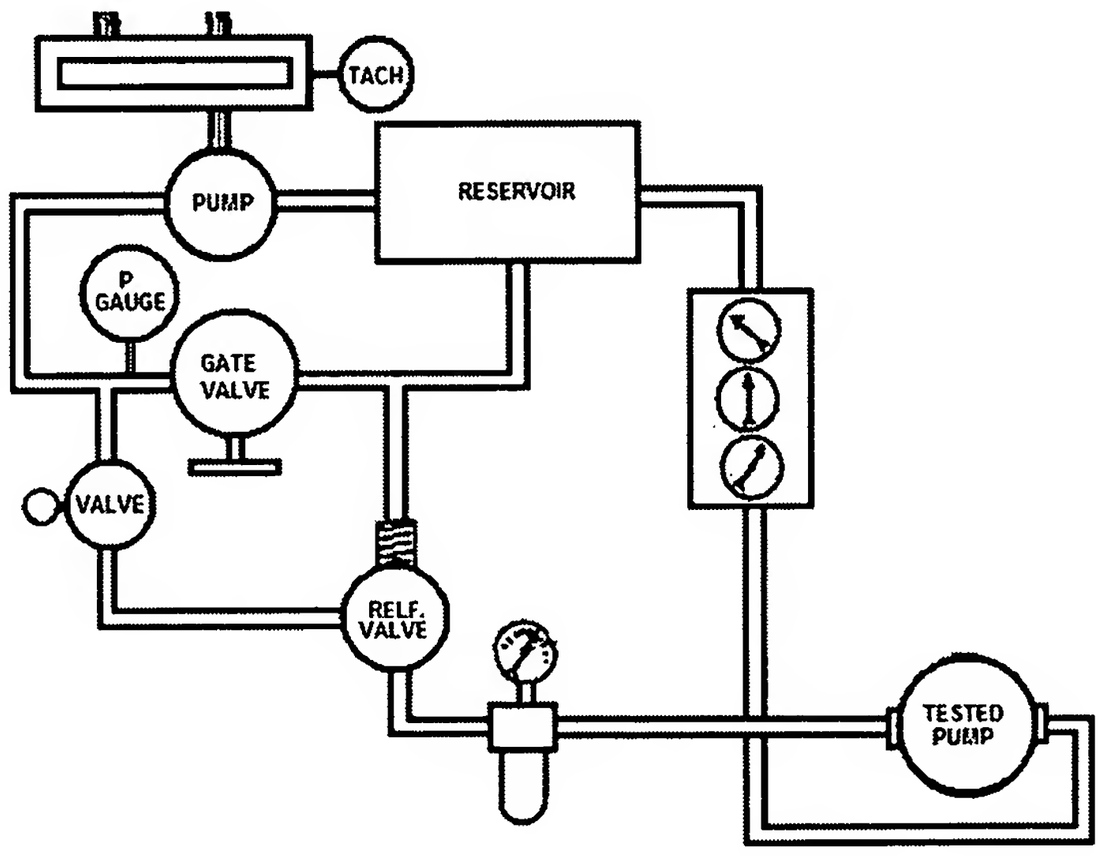

Figure 1

The apparatus comprises a first hydraulic fluid reservoir (reference item 32) and a fluid moving pump (reference item 30) that is fluidically coupled to the first hydraulic reservoir. The apparatus also comprises a plurality of pressure gauges (reference items 34 and 50), including an additional pressure gauge on

the flow rater (reference item 68), that can detect the pressures at various points in the hydraulic circuit. As seen in figure 3 there is an indication of the fluid pressure either at reference item 50 or at reference item 68. The flow rater also comprises a temperature sensor for monitoring and indicating the temperature of the hydraulic fluid.

Beran *et al.* teaches an apparatus for testing a device (reference item 6) using a hydraulically controlled piston (reference item 2) located in a housing (reference item 1). The piston defines two chambers (reference items 3 and 4) inside of the housing where chamber 3 can be a pressure side and chamber 4 can be an output side. The chamber shown as reference item 4 would be a second hydraulic reservoir. The device also comprises a relief valve (reference item 15) and servo valve (reference item 10) that is capable of separately adjusting the pressures in the two chambers. Beran *et al.* teaches that their system is beneficial in that is allows the DUT to be subjected to the variable loads, e.g., jerk loads, which simulate actual process loads.

Brevick *et al.* teaches a method and apparatus for testing hydraulically actuated devices. The apparatus comprises first hydraulic reservoir (reference item 44) and a fluid moving pump (reference item 48) that is fluidically coupled to the first hydraulic reservoir. Brevick *et al.* also teaches that it is known to provide an environmental testing chamber (reference item 13) that generally surrounds the DUT. This environmental chamber is taught as being

useful for simulated expected operating temperatures such as in the range of 0 °F to 250 °F.

Phillips teaches a known environmental test chamber (reference item 5) for testing various items (reference item 35). The test chamber has an air processing system (reference item 7) with an air inlet and air outlet for providing air circulation through the test chamber. The air's temperature can be lowered or elevated depending on the desired testing conditions. It is also shown to have a temperature sensor (reference item 37) coupled to a controller (reference item 56) for monitoring and indicating the temperature of the fluid flowing through the housing. Based on the temperature the controller can adjust the cooling of the airflow through the housing.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Shepard with the teachings of Beran *et al.*, Brevick *et al.*, and Phillips to provide a hydraulic device testing system in combination with a load-adjusting piston and an environmental chamber having air circulation means. Adding the servo valve/piston arrangement of Beran *et al.* onto the device of Shepard; i.e., installing it after the filter (reference item 50) (see figure 2 below), would allow the DUT to be subjected to process loads that simulate actual operating conditions. Furthermore, adding the test chamber of Brevick *et al.* to the device of Shepard would allow one to simulate actual operating conditions. Finally, by utilizing air circulation as taught by Phillips one can maintain the required

test chamber temperature using less energy. That is, it takes less energy for the air cooling means to maintain the air at a predetermined lowered temperature than it would to constantly chill ambient air from outside the test chamber.

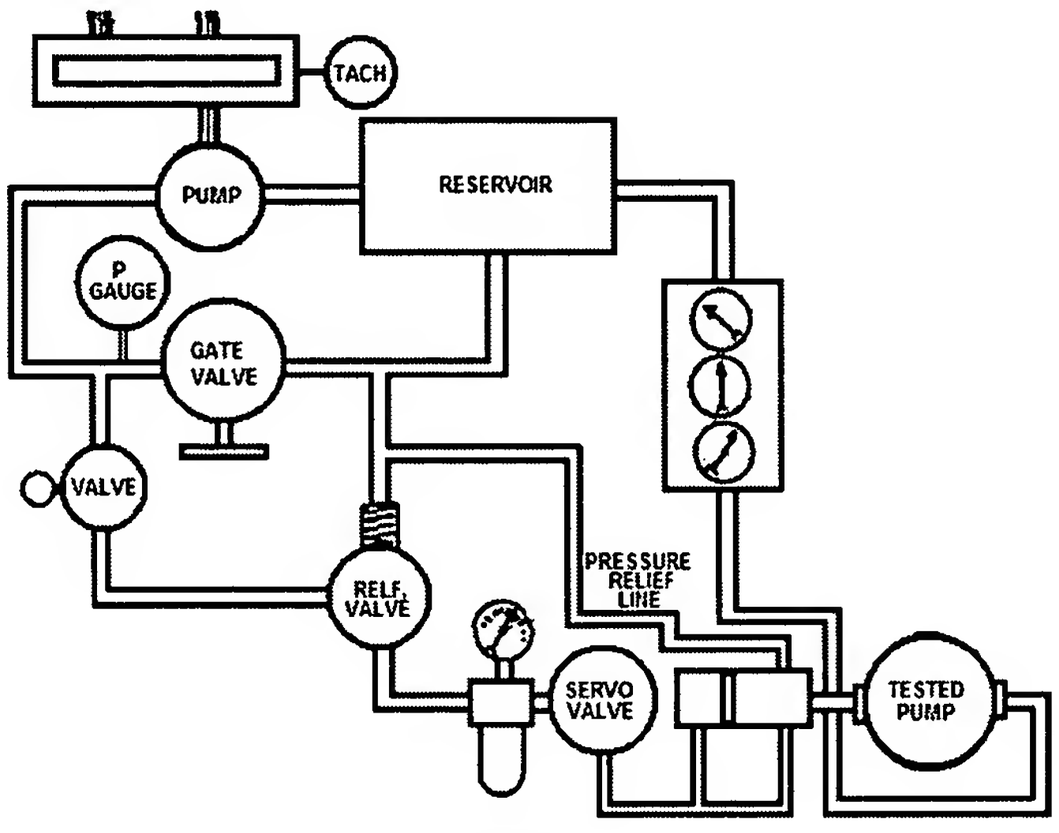

Figure 2

With regard to claims 2 and 3 Shepard teaches a plurality of valves (reference item 36, 46, and 48) for controlling the movement of the hydraulic fluid. These valves inherently separate the tested pump's input hydraulic fluid from its output hydraulic fluid. Furthermore, the servo valve/relief valve arrangement of Beran *et al.* installed after the filter, as noted above, would also control the hydraulic fluid. Finally, adapting the environmental chambers of Brevick *et al.* and/or Phillips to generally surround the servo valve/piston and the DUT would allow only the necessary components to be subjected to the reduced/elevated temperatures. Brevick *et al.* clearly shows

an environmental chamber that generally surrounds the DUT but not the initial hydraulic fluid reservoir.

With regard to claims 4, 19, 21, and 22 the chamber of either Brevick *et al.* or Phillips could contain both the second hydraulic fluid reservoir and the DUT. Furthermore, one housing having both the reservoir and the DUT is functionally the same as having two housings that are fluidically coupled to allow the cooling fluid to pass through both housings. The applicant has not disclosed any critical feature or other unexpected result that comes from having two housings vice one large housing.

With regard to claims 5 and 20 the environmental chamber of Brevick *et al.* would inherently cool the DUT.

With regard to claim 7 the hydraulic circuit of Shepard comprises a plurality of valves (reference items 36, 46, and 48) that allow for both a use configuration and a bypass configuration. The servo valve/piston arrangement of Beran *et al.* allows for a fill configuration; i.e., filling the chambers with hydraulic fluid.

With regard to claim 13 it would have been obvious to connect any of the pressure gauges of Shepard to a controller, such as the one shown in Phillips, so that the speed of the pump can be adjusted as necessary to deliver to the fluid to the DUT.

With regard to claim 14 it would have been obvious to add a pressure gauge after the servo valve/piston arrangement shown in figure 2 above so that the test can record the actual pressures used ton the DUT.

With regard to claim 25 the output side of the piston arrangement receives initial hydraulic fluid in a fill configuration.

With regard to claim 26 the pressure side of the piston arrangement receives initial hydraulic fluid during a use configuration.

With regard to claim 27 neither chamber will receive hydraulic fluid when the system is in a bypass configuration; i.e., Shepard teaches a bypass configuration where valve 46 is closed and valve 36 is open.

With regard to claim 29 the valve shown as reference item 46 functions as an inlet valve that controls the hydraulic fluid flowing out of the first reservoir. The relief valve shown as reference item 15 in the device of Beran *et al.* is a return valve that controls the hydraulic fluid. As seen in Beran *et al.* the relief valve directs the hydraulic fluid to a reservoir, which would the same as the reservoir shown in Shepard. Finally, Shepard discloses the use of couplings (reference items 54 and 64). Adapting these couplings to be valves would have been obvious in order to isolate the hydraulic fluid from the DUT so that the DUT can removed and/or replaced with another DUT.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Russian Patent Application Publication RU 1733725 to Gurskii *et al.* teaches that it is known to provide heated hydraulic fluid to a device under test.

b. Japanese Laid Open Patent Application Publication JP 55029751 to Koshizuka *et al.* teaches the use of a hydraulically actuated piston for providing hydraulic fluid to a device under test.

c. "Cryogenic Testing of an Aircraft Hydraulic Pump" to Mechanical Systems, Inc. teaches that it is known to provide cooled hydraulic fluid to a pump being tested in order to replicate expected operating conditions.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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18 May 2006

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